

IN THE CLAIMS:

Please amend claims 1, 14 and 15 as follows. Claim 21 is added. A copy of all pending claims and a status of the claims is provided below.

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parker
1. (currently amended) A multiple stage pump, comprising:
 - a first pump in a first stage;
 - a second pump in a second stage;
 - at least one valve upstream from one of the first pump and the second pump in at least one of the first stage and the second stage for reducing or eliminating pressure peaks generated from the first and second pumps; and
 - a common branch line connecting the first stage and the second stage to a common hydraulic system.
 2. (original) The multiple stage pump of claim 1, wherein the at least one valve includes:
 - a first valve upstream of the first pump in the first stage of the hydraulic system; and
 - a second valve upstream of the second pump in the second stage of the hydraulic system.
 3. (original) The multiple stage pump of claim 1, further including:
 - at least another valve in direct line and upstream from the at least one valve; and
 - a valve system associated with the common branch line upstream from the connection of the first stage and the second stage.
 4. (original) The multiple stage pump of claim 3, wherein
 - the at least one valve includes:
 - a first valve upstream of the first pump in the first stage of the hydraulic system;
 - and
 - a second valve upstream of the second pump in the second stage of the hydraulic system; and
 - the at least another valve includes:
 - a first other valve upstream from the first valve; and

a second other valve upstream from the second valve.

5. (original) The multiple stage pump of claim 1, wherein the at least one valve includes three valves associated with both the first stage and the second stage.

6. (original) The multiple stage pump of claim 1, wherein the at least one valve is one of a control valve, a flow valve, a pressure control valve and an on/off valve.

7. (original) The multiple stage pump of claim 1, further comprising:

a first check valve associated with the first stage; and

a second check valve associated with the second stage, wherein

the first check valve is adapted to ensure that the second pump in the second stage is not running against a low pressure of a valve of the at least one valve associated with the second stage which is in an "off" position, and

the second check valve is adapted to ensure that the first pump in the first stage is not running against a low pressure of a valve of the at least one valve associated with the first stage which is in the "off" position.

8. (original) A multiple stage pump, comprising:

at least two pumps; and

at least two valve means for regulating fluid from the at least two pumps, respectively, the at least two valve means being upstream from the at least two pumps in a respectively same line as the at least two pumps.

9. (original) The multiple stage pump of claim 8, further comprising a merged line upstream from the at least two valve means.

10. (original) The multiple stage pump of claim 9, wherein the at least two valve means are control valves, flow valves or on/off valves.

11. (original) The multiple stage pump of claim 9, wherein the at least two valve means are pressure regulated valves.

12. (original) The multiple stage pump of claim 9, wherein the at least two valve means are pressure relief valves.

13. (original) The multiple stage pump of claim 9, wherein the at least two valve means are each a set of valves.

14. (currently amended) A pumping system adapted for supplying fluid to an injector, comprising:

a multiple stage pumping system having a multitude of pump stages for supplying the fluid to the injector; and

a flow control system for providing a linear flow control throughout the multitude of pump stages while preventing pressure peaks,

wherein for each pump stage a pressure control valve regulates the on/off function of a multitude of volumes to supply the from each pump stage ~~with the fluid to the injector~~.

15. (currently amended) The pumping system of claim 14, further comprising a common branch rail associated with the multiple stage pumping for ~~supply~~ supplying the fluid to the injector, wherein

the fluid flow passes a check valve after each pump stage before the fluid flow is combined in the common branch line,

~~the check valves regulate switching without pressure peaks throughout the multiple stage pumping system, and~~

the check valves are adapted to ensure that an opposite side pump of the multiple stage pumping system is not running against a low pressure of a valve which is in an "off" position.

16. (original) The pumping system of claim 15, wherein the control valves are positioned in parallel and in line to respective reservoirs thereby eliminating pressure drops.

17. (original) The pumping system of claim 16, wherein a start position of any of the control valves is a closed position to thus provide a fail safe position when any of the control valves fails.

18. (original) The pumping system of claim 1, wherein the at least one valve is capable of producing pressure within a range during a power failure of solenoids.

19. (original) The pumping system of claim 14, wherein the flow control systems includes control valves which are capable of producing pressure within a range during a power failure of solenoids.

20. (original) The pumping system of claim 19, wherein the control valves are designed to have an optimum pressure drop at room temperature or higher thereby.

21. (currently added) A method of reducing or eliminating pressure peaks in a fuel injector, comprising the steps of:

- pressurizing a fluid in a first pumping stage;
- pressurizing a fluid in a second pumping stage;
- controlling the fluid through a valve system of the first and second pumping stage to provide a linear flow throughout the first and second pumping stages while preventing pressure peaks therein; and
- merging the fluid from the first pumping stage and the second pumping stage into a common branch line, wherein
 - the controlling step prevents pressure peaks in the common branch line, and
 - the fluid passes a check valve in the first and second pumping stage before merging in the common branch line such that a pump in one of the first and second pumping stage is not running against a low pressure of another pump in another of the one of the first and second pumping stage.